



Regional Sediment Management

Sediment Management at the Mouth of the Columbia River:
Innovative Approaches

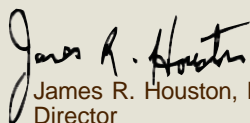
Quick interagency team action saves project
for endangered birds

Regional Morphology Analysis Package (RMAP):
A State-of-the-Science Overview

U.S. Army Corps of Engineers well represented
at ICCE 1004 in Lisbon

Regional Sediment Management

This information exchange bulletin is published in accordance with AR 25-30 as an information dissemination function/technology transfer mandate of the Regional Sediment Management Research and Demonstration Programs under the U.S. Army Engineer Research and Development Center. The contents of this publication are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or the approval of the use of such commercial products or services. Submissions are solicited from all sources and will be considered for publication. Mail correspondence to USAERDC, Coastal and Hydraulics Laboratory (CEERD-HC-S), 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, Tel.: 601-634-2349; URL: www.wes.army.mil/rsm/


James R. Houston, Ph.D.
Director

About the Cover



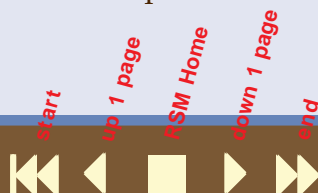
RSM demonstration project at the
Mouth of the Columbia River

Features

Sediment Management at the Mouth of the Columbia River: Innovative Approaches	1
Quick interagency team action saves project for endangered birds	6
Regional Morphology Analysis Package (RMAP): A State-of-the-Science Overview	10
U.S. Army Corps of Engineers well represented at ICCE 1004 in Lisbon	16

Departments

Calendar	17
New on-line publications	17



Sediment Management at the Mouth of the Columbia River: Innovative Approaches

By *Karen Bahus*, U. S. Army Engineer District, Portland

In the fall of 2003, the U.S. Army Corps of Engineers launched a Regional Sediment Management (RSM) demonstration project at the Mouth of the Columbia River (MCR). The project includes the Columbia River littoral cell from Point Grenville, Washington, to Tillamook Head, Oregon, and to river mile 7 in the Columbia River. It is part of a national initiative to coordinate dredging activities in coastal zones to retain sand in the littoral zone, while fostering balanced, natural systems and reducing project costs. The RSM initiative focuses on the regional implications of sediment movement and on viewing sand as a resource. The overall goal of this RSM project is to implement a proactive, collaborative process for optimally managing sand in the MCR littoral zone.

Implementation of RSM will sustain a biologically, physically and economically healthy coastline in Washington and Oregon by improving management of coastal sediment resources. The project will incorporate long-term regional planning and an interdisciplinary scientific approach into project decisions that affect sediment movement and availability in the Columbia River littoral cell. The Columbia River littoral zone, the shallow-water region of the coast affected by rivers and waves and where sediment transport is high, spans 100 miles of Pacific Northwest beaches and provides critical biological habitat.

Sand is fundamental to the habitat of salmon, Dungeness crab, razor clams, and other marine-dependent species.

Since the sediment budget at MCR affects coastal locations within both the Portland and Seattle Districts, the RSM Product Delivery Team includes members from both Districts. Each year, the Corps dredges 3 to 5 million cubic yards of sand at the MCR to maintain a 5-mile-long, deep-draft navigation channel. In recent times, this dredged sand has become of paramount importance for coastal areas north and south of the MCR. The sand presently dredged is placed in existing ocean-dredged material disposal sites and a Section 404, Clean Water Act site adjacent to the north jetty. These sites have been used to the maximum extent possible, keeping sediment in the littoral system and helping to protect the north jetty from potential undermining. Remaining sand is placed at a deepwater offshore site.

Selection and use of disposal sites at the MCR are complicated by the need to balance conflicting objectives. Disposing of sand in deep water results in high transportation costs and loss of a valuable resource, while placing sand directly on the beach results in huge operational costs. Placement of sand in the nearshore areas has been controversial to people who earn their living fishing in these areas. The actual disposal of sand has been a more

challenging issue at times than the actual dredging itself. Thus, a major goal for the RSM demonstration project is to develop a long-term strategy for dredging and placement practices of sand at the MCR as a more acceptable and cost-effective alternative. To reach this goal, the Product Delivery Team is taking innovative steps for regionally managing the sediment in the littoral zone.

“A key component to the success of the RSM project will be stakeholder involvement,” said Doris McKillip, project manager, Portland District. “We are focusing our initial efforts on an innovative approach to stakeholder involvement called collaborative learning.” Many parties are involved, with stakeholders coming from state agencies, other Federal agencies, local communities, commercial organizations and interest groups.

Collaborative Learning

Collaborative Learning (CL) is an approach used for complex and controversial natural resource, environmental, and community decision-making situations. CL emphasizes activities that encourage systems thinking, joint learning, open communication, constructive conflict management, and a focus on appropriate change. The CL approach for the RSM demonstration project includes community workshops on RSM issues, opportunities for stakeholders to participate in training sessions, and conversations with stakeholders to learn about their opinions of RSM.

The Corps brought in a team led by Gregg Walker of Walker Consulting and Oregon State University to conduct the CL approach for the RSM project. The first phase of the team’s involvement focused on having conversations with stakeholders and holding training sessions in the fall of 2003. More than 70 people participated in the stakeholder conversations. A two-day CL training session was held for Corps personnel and included participants from the Seattle, Portland, and Walla Walla Districts. Stakeholders and citizens were invited to participate in a one-day CL training session. Two identical training sessions were held, one in Portland and one in Ilwaco, Washington. More than 35 people participated in these sessions (Figure 1.).



Figure 1. CL training session

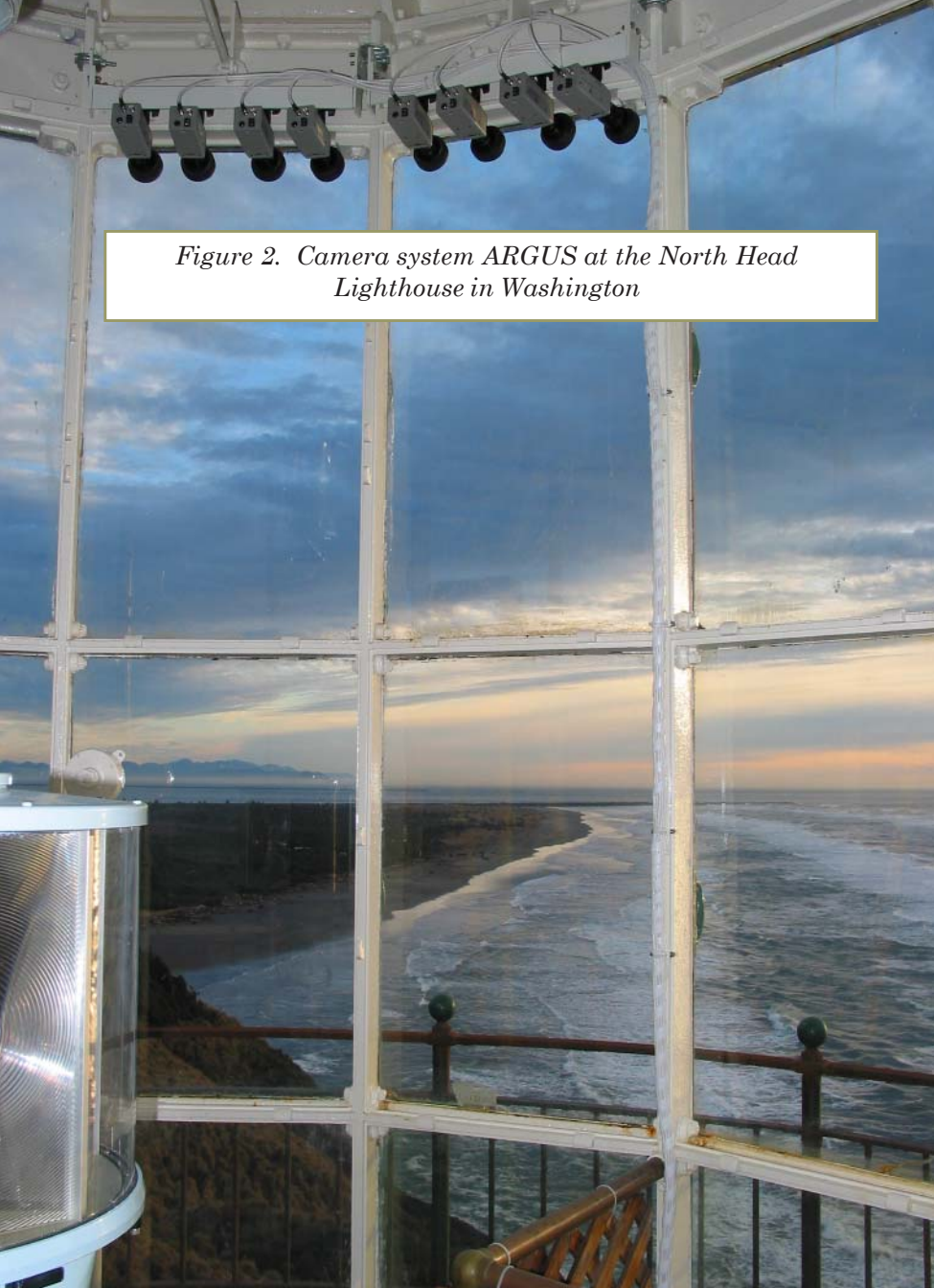


Figure 2. Camera system ARGUS at the North Head Lighthouse in Washington

A number of key points emerged from the conversations and training sessions: people are uncertain about RSM; RSM needs to be defined and explained; the goals, objectives, and decision space need to be clear; what will RSM do and who will fund RSM work?; the Corps needs to demonstrate that this is not business as usual; state and Federal agencies need to coordinate their efforts; agency personnel need to be involved; and even though trust could be better, stakeholders are optimistic that RSM can bring parties together.

Comments about how the RSM initiative could succeed emphasized involving as many stakeholders as possible, communicating openly about the RSM purpose and agenda, and about the Corps' limitations or constraints. Respondents hoped their concerns will be heard and their suggestions will be incorporated into the planning process and products. Several respondents advocated addressing local needs and using local knowledge, as well as informing stakeholders of scientific studies and information. One training participant and prominent stakeholder wrote:

"Overall, I believe that the [RSM-CL] process has great potential of breaking through the lack of trust barrier—if the key parties commit to the process . . . [It] will help break the logjam and provide solutions not previously understood or addressed. [It must be] a very inclusive process that is facilitated."

"The RSM project has good collaborative potential," said Walker, based on the stakeholder conversations,

the training sessions, and relevant Corps materials. “Many stakeholders are optimistic and would like to work together.”

The next phase of stakeholder involvement will involve a greater number of stakeholders and citizens in CL events. Possibilities include community workshops on RSM issues, scientific and technical forums, ongoing reporting of products and progress, and a communication plan.

Technical information is also an important component of RSM, and much information was gathered in 2003 and 2004. The most visible was the installation of a digitized camera system, known as ARGUS, at the North Head Lighthouse in Washington (Figure 2). ARGUS was developed at Oregon State University with Corps funding. It is now used worldwide (www.planetargus.com). The system at North Head uses eight video cameras to gather scientific information in an area encompassing Cape Disappointment (formerly Fort Canby) State Park, Benson Beach, Site E (dredged sediment disposal site) and the north jetty at the MCR. Pictures, which are extracted and compiled from the Argus cameras, are available on-line at (http://zuma.nwra.com/north_head).

The four cameras looking out toward Site E update every 20 minutes and produce traditional snapshots, showing wave activity (Figures 3 and 4). All cameras update hourly snapshots, 10-minute time-

exposure images of the wave dissipation patterns (revealing submerged sandbars and rip channels) and variance images (revealing changes in the image). The camera images are merged and rectified to present a satellite-eye view of the coastal zone. The processed data yield continuous information on beach and ocean characteristics, such as shoreline location, dry-beach area, sandbar development and movement shoreline swash (runup), primary incident wave period and direction, intertidal beach profiles and sand volumes, and surf zone surface currents. This information can be used



Figure 3. ARGUS 2.0 snapshot, Thursday, Feb 26, 08:00:14 2004

to increase the understanding of the physics of nearshore fluid motions that drive the beach-sediment response, thus leading to better decisions concerning potential beneficial placement of sediment. So, cameras are in place, and initial public involvement sessions have been held. Much has been done this first year of RSM. With the framework established, the question remains: What is the Corps planning to accomplish?

“What I’m hoping to accomplish with RSM is quite simple: I’m looking for a better, more cost-efficient method to handle sediment at the MCR,” said McKillip. “Will these efforts get me to that end state? I think they will. Our approaches with the RSM project are new and innovative. These new methods should provide us with a new set of eyes to view this complicated situation, and ultimately—reach mutually beneficial solutions for the American taxpayer and the many RSM stakeholders.”



Figure 4. ARGUS 2.0 snapshot, Thursday, Feb 26, 10:10:31 2004

Quick interagency team action saves project for endangered birds

This article is a follow-up story on a project reported in [Regional Sediment Management, Volume 1, Winter/Spring 2003](#), pp 7-9) by [JoAnne Castagna](#), Ed.D., U.S. Army Engineer District, New York

Terns are an endangered bird species that migrate north during the spring and summer months and nest on Long Island, taking over the shore. Today, hundreds of terns are nesting on East Inlet Island, located in the Long Island Intracoastal Waterway.

This was the goal of a multiagency team assembled by the Corps' New York District in 2002 that created a wildlife habitat on the island for endangered birds using dredged sand from the waterway. Recently the initiative faced an obstacle that threatened the project. The team pulled together, worked out ideas on a solution, and today the habitat is thriving.

Background

The Long Island Intracoastal Waterway spans 33.6 miles from the town of Patchogue to the south end of the Shinnecock Canal. Dredging has long been the solution to facilitate navigation in the channel in this area. Every few years, the dredged sand has been placed on upland sites on the mainland and ocean barrier islands. Development growth along the shoreline, however, has eliminated this option.

After examining what other districts along the waterway were doing with their dredged sand, the team decided to dredge "bite-size pieces" of the channel and to deposit these smaller portions of sand on an island to create a

wildlife habitat for threatened and endangered bird species, including least terns, common terns, piping plovers and roseate terns, according to John Tavolaro, Acting Chief, Operations Division, U.S. Army Engineer District, New York.

East Inlet Island, a 30-acre island one-half mile off the town of Moriches mainland, was chosen to be the habitat location. "In September 2002 the project began and from October 2002 to January 2003, a contractor dredged approximately 5 miles of the Moriches Bay and pumped the dredged sand onto a 13-acre portion of the island," said Jodi McDonald, project manager, New York District. The dredged sand was then regraded to achieve the proper slope and texture preferred by nesting birds.

The habitat was designed to help encourage the birds to nest on the island. The team made the island inviting by devegetating it and building nest boxes to replicate the habitat needs of these shorebirds. In addition, they placed string fencing and interpretive signage reminding the public that the area is restricted from human use and developed a predator control program, in the event land predators, such as foxes and raccoons, are identified on the site.



Problem Discovered

In the spring the desired birds colonize, nest, and breed on Long Island after spending the winter in the south. In spring 2003, birds were spotted nesting on the island. However, primarily seagulls, not terns were nesting there. It was found that the island's ground was not suitable for terns to nest. The ground was "clay-like" and not sandy, as is more suitable habitat for the endangered birds. In addition, the ground was not conducive to the growth of vegetation preferred by these birds.

"The appearance resembled the surface of the moon," said Randall Hintz, Chief, Technical Support Section, New York District. "Sediment samples taken prior to dredging indicated the material to be placed would be predominantly sand. Unfortunately, as with any dredging project, individual pockets of finer grain material can pop up during the dredging operation (Figure 1). Of the 53,000 cubic yards of material dredged from the project, about 7,000 cubic yards of fine silty material was encountered." He continued, "Though not contaminated, the appearance of the finer grain materials would detract from the overall shore bird habitat restoration and preclude the regrowth of native beach grass and golden-rod vegetation."

Hintz said, "If encountered early in the project, contractors can generally cover the finer materials



Figure 1. Randy Hintz, USACE, Operation's Technical Support Section, digging a test pit to determine the depth of silty material on the island (Provided by Randall Hintz, New York District)

with sandy material since there is no threat to nature by the presence of the silty material. Unfortunately for East Inlet Island, the finer materials were encountered late in the project and had to be left exposed on the surface.”

Immediate Action

The team couldn't do anything since last spring because the region had a very wet season. The ground needed to dry out before any work could be done. In early March 2004 the team saw a new nesting season on the horizon and the need for immediate action. A project delivery team was organized within the New York District to develop suitable alternatives to remediate the situation. The plan was to cover over the majority of the silty material with a layer of sand and where the silt was deeper, create trenches to allow the material to dry.

On March 3 the multiagency team approved of the Corps' remediation plan. The plan needed to be executed and completed by April 1, prior to the return of the birds. On March 25, B & B Dredging, a HUB Zone small business contractor, was awarded the contract and had one week to complete the remediation work, starting that Tuesday, March 25. The work was completed three days ahead of schedule, on Sunday, March 28.

On April 7 after the remediation was completed, the Corps worked side by side with the U.S. Fish and Wildlife Service and the New York State Department of Environmental Conservation and planted 1,500 plugs of beach grass and 300 goldenrod plants on top of the now sandy surface of the island (Figure 2).



Figure 2. U.S. Fish and Wildlife Service and Corps staff planting (Provided by Randall Hintz, New York District)

Project Success

“As an agency, this has been a great experience for us. We recognize the delicate relationship that needs to be built with the resource agencies early on to not only define the specific areas that need to be dredged but also a better understanding of the nature of the material to be removed,” Hintz said. “With the nature of dredging, these situations are unavoidable, the most significant lesson learned for us as an organization is to work with the resources agencies up-front to develop remedies should a similar incident occur on another project. The goal is to create a win-win situation for everyone involved.”

Hintz added, “This project is a success in that not only are the endangered birds species presently nesting on East Inlet Island, but this obstacle we faced showed the partnering agencies that if we put our minds together we can really accomplish amazing things in a short period of time.”



Regional Morphology Analysis Package (RMAP): A State-of-the-Science Overview

By [Brian Batten](#), Ph.D, Coastal and Hydraulics Laboratory, ERDC, Vicksburg

The Regional Morphology Analysis Package (RMAP) is an integrated set of computer-based tools for manipulating, analyzing, visualizing, and archiving data on shoreline positions and beach profiles in a georeferenced environment on a personal computer. Notes can be added and displayed, referencing aerial photographs and maps. Data types and analysis procedures are applicable to coasts, estuaries, and rivers and support regional as well as local project studies.

Background

RMAP evolved from an earlier package version, the Beach Morphology Analysis Package (BMAP), which was based on the forerunner, the BEACH CHange model (SBEACH). Although BMAP provides a robust toolset for profile analysis, it is limited to data in distance-elevation space. BMAP requires the user to discard the geospatial aspect of profile data, essential in data assembly and quality control. Regional analysis requires manipulation of another type of two-dimensional data, the shoreline, which is georeferenced. Numerical simulation models under development in the Regional Sediment Management (RSM) Program involve manipulation of data and corresponding outputs in a georeferenced coordinate system, often over wide geographic areas and different coordinate systems. These and other U.S. Army Corps of Engineers needs identified at a field-data collection workshop were the stimulus for creation of RMAP.

Typically, analysis of beach profile and shoreline position data requires several software packages. On the other hand, the engineering and numerical modeling work environment calls for tools directly supporting work flow from the original surveys to quality control, analysis, and input to a project report or model. RMAP contains a comprehensive set of analysis and visualization tools required for project work flow, from the import of raw data and coordinate conversion through detailed analysis to report-quality graphics. RMAP supports analysis of beach profile, channel, or river cross-sectional data, and shoreline position data for engineering and science applications. Capabilities extend from generation of spatially referenced shoreline change maps to a large suite of beach profile analysis tools. Data can be examined in both cross-sectional and map views to simplify data assembly, quality control and assurance, data analysis, and generation of report figures. The map viewer supports the display of profiles, shorelines, aerial imagery and ArcView shapefiles in a geospatial environment. Data options allow storage, organization, and analysis of data in a single application, with support for a variety of import/export formats. Chart options allow tailoring of graphics to personal needs, supporting export of images, and direct copy and paste into word processing software. Metadata can be stored at project, group, or individual data item levels. RMAP is backwards-compatible with

BMAP project files and supports calculation of geographic coordinates from reduced distance-elevation data pairs.

A summary of present capabilities of the RMAP software reveals the need for additional work. This work is pursued under the RSM Program and will add routines to RMAP for analyzing and visualizing three-dimensional (X, Y, Z) data, where X and Y denote horizontal coordinates, and Z denotes the vertical coordinate. In addition, the final version will include relational database capability to archive and access large data in space and time that are often encountered in RSM applications.

RMAP Interface

RMAP runs in the Microsoft Windows environment and requires computer resources available on typical personal computers. The RMAP interface comprises four main features (Figure 1).

File Menu and Toolbar

The RMAP file menu provides access to functions common in Windows applications (such as **Save**, **Open**, etc.), and those functions unique to RMAP, such as graph controls, data grid functions and profile and shoreline analysis tools. Many functions can also be accessed from the RMAP toolbar, where they are grouped by functionality (Figure 2). Functions unique to RMAP are discussed here.

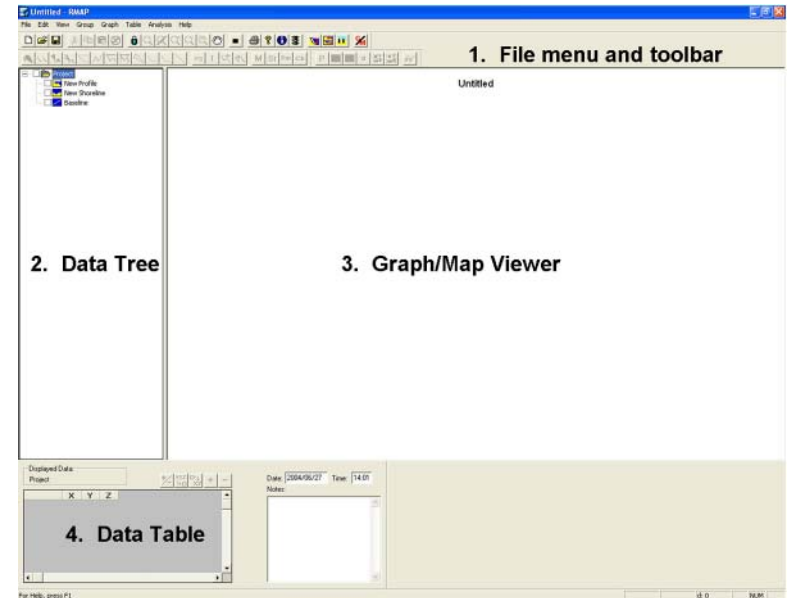


Figure 1. The RMAP interface comprises (1) the file menu and toolbar, (2) the data tree, (3) the graph/map viewer, and (4) the data table.

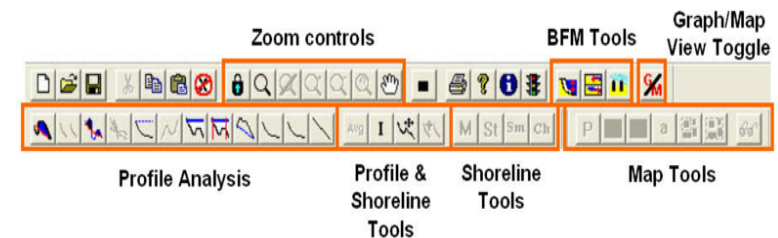


Figure 2. The RMAP toolbar is organized by file/program functions, zoom controls, Beach Fill Module tools, profile analysis, shared profile and shoreline tools, shoreline tools and analysis, and map tools.

Data Tree

Data are managed and selected for analysis in the Data Tree. The data tree in RMAP displays and organizes project data into three categories: beach profiles, shorelines, and baselines, each identified by a unique icon. Data can be brought into RMAP by importing from ASCII text or RMAP free format, copying and pasting from spreadsheet applications, converted from ArcView shapefile format (shorelines and baselines only), or entered into the data table by the user. Data tree entries are generated and named automatically when importing profile, shoreline, or baseline data from ASCII text. Data-tree entries must be created first and then must be renamed by the user when copying and pasting data into RMAP.

Items can be arranged into groups and subgroups under the *Project* menu. Data items can be sorted by date or name, or manually sorted by the user by dragging and dropping in desired order. Metadata settings include origin location and transect azimuth for profiles and definition for shorelines (e.g., as the high-water line (HWL), wetted bound, among others. A data item is plotted in the graph/map viewer and made available for analysis by activating the selection box beside the data type icon. The selection box also provides a means of copying, pasting, moving, and deleting multiple data items in the tree. In addition, selection boxes are used to conduct analysis functions, coordinate conversion, and distance calculations for multiple items.

Graph/Map Viewer

The Graph/Map Viewer allows visualization of both profile and shoreline data in graph (cross section) or map (plan) views. The window is toggled between the two views by means of the RMAP toolbar (Figure 2). Data are plotted in the viewer by activating the selection box next to the item. In graph view, a typical cross-section plot is generated in the viewer. The plot legend is automatically generated on the plot as data are added. Plot axes adjust to the full extent of plotted data; however, the user can manually set the axis extent. The user can zoom into areas of interest and pan around the viewer to investigate data. Data values in the view automatically refresh as the data table is edited. The user has full control over graph appearance with the options available under a *Graph* menu.

The map view allows visualization of spatially referenced profile, shoreline and baseline data, in addition to georeferenced aerial photography and ArcView shapefiles. The ability to view data in plan view overlaid with ground imagery assists with data assembly, quality control and data analysis. Each item is labeled according to the object name in the data tree as it is added to the view. Labels, feature items, and legends can be edited individually or as a group. The display properties of all items in the map view can be customized to individual preferences in the map properties dialogue.

RMAP supports a variety of geographic and projected coordinate systems, including North American Datum

(1927 and 1983), Geographic Coordinate Systems, U.S. State Plane, Universal Transverse Mercator, and World Geodetic System coordinates, in addition to many other systems in use worldwide. Units can be in either feet or meters. The user selects the project coordinate system in the map view properties; all data imported into RMAP can be then be converted to the project datum from within the application. Once the conversion is complete, the Data Table is refreshed with the new coordinates, and the conversion is recorded as metadata in the “Notes” section of the data table.

Shoreline analysis is directly supported in the map view. RMAP allows the user to calculate change rates between two shorelines from a user-defined baseline. Shoreline analysis transects are established perpendicular to the baseline at a user-specified interval, and then shoreline change and change rates can be calculated at each transect along the baseline. Shorelines and baselines can be imported from text, converted from ArcView shapefiles, or drawn in the map viewer. Tools allow the user to annotate shoreline position on a photograph, creating a georeferenced shoreline entry in the data tree upon completion. After shoreline analysis is complete, RMAP generates an analysis report, a spatially referenced shoreline change map (Figure 3), and a shoreline change rate plot in graph mode.

Profile data are also projected in the map view, simplifying the creation of base maps, easing data assembly, and streamlining quality control of data. As profile data are

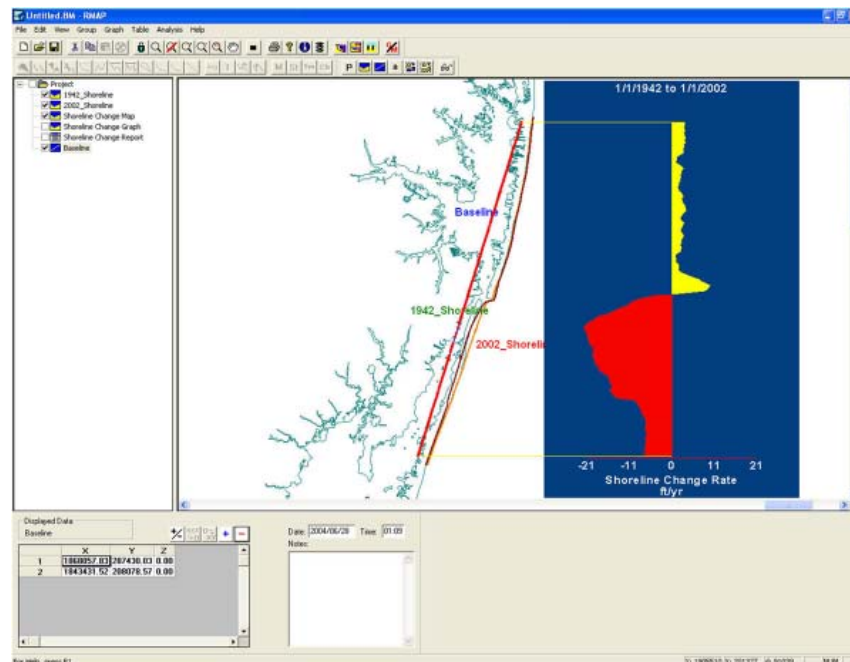


Figure 3. Spatially referenced shoreline change rate map for the eastern shore of Maryland showing erosion downdrift of Ocean City Inlet.

plotted, a color map elevation gradient is generated along the profile line to allow the user to distinguish shallow and deep portions of the profile (Figure 4). Profile overlap, distance off the transect azimuth, and the overall goodness of fit of the data are easily evaluated by switching back and forth between map and graph modes (Figure 5). Ready availability of map and graph modes conveniently translates or shifts data, and results can be easily evaluated in both cross-section and plan views.

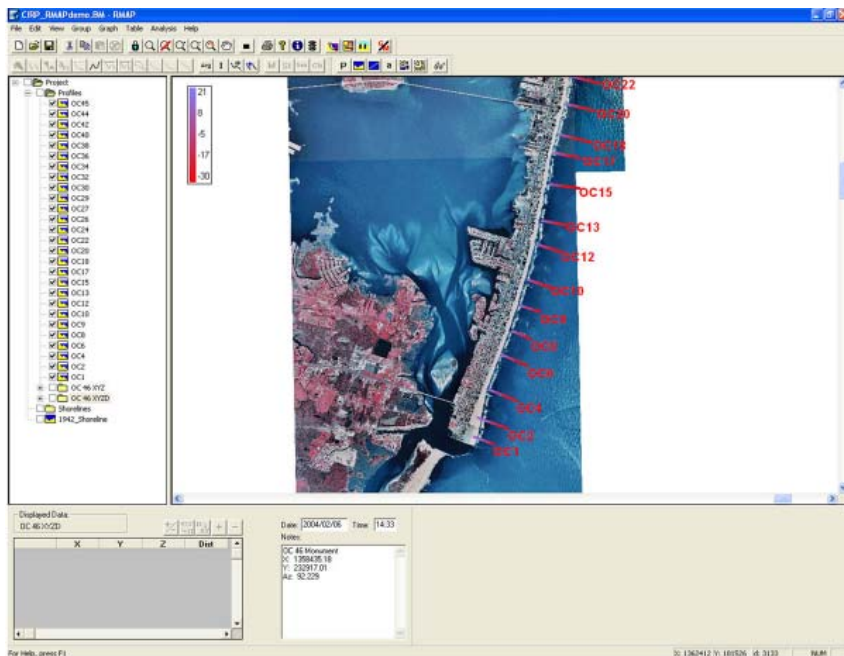


Figure 4. Profile data plotted in map view with georeferenced aerial photography in the background.

Data Table

The Data Table allows the user to view and edit the time stamp, coordinate, elevation and distance values for each item in the data tree (Figure 6). A “Notes” window is also provided to allow storage of metadata for individual items. Data in the grid are edited in a fashion similar to standard spreadsheet applications. Formats for the different data types can be viewed below.

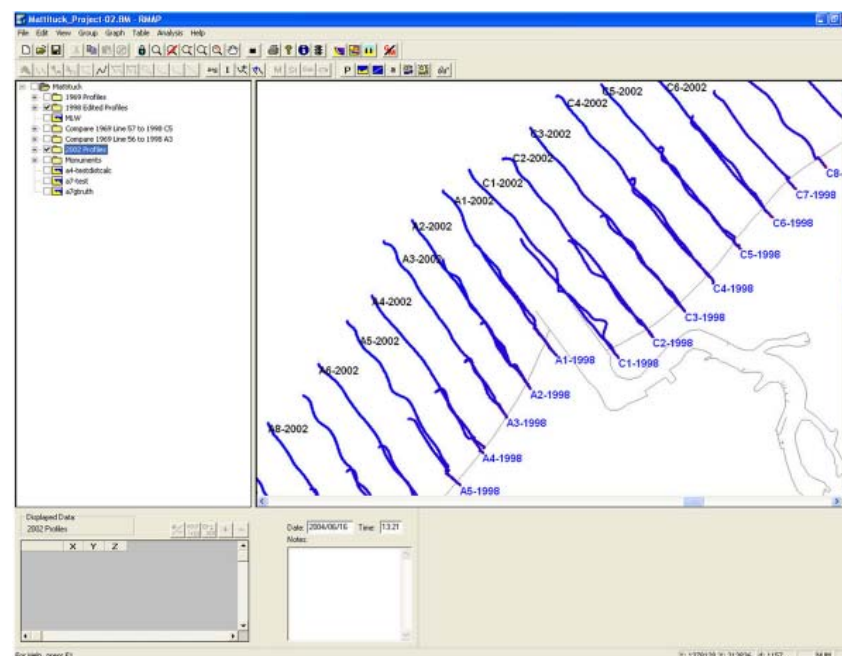


Figure 5. The map view allows investigators to view profile data in plan view, simplifying project data assembly and quality control of successive survey data.

Shoreline Analysis Tools

RMAP provides the following tools to perform shoreline change analysis.

- Shoreline Change
- Shapefile convert
- Draw shoreline/baseline
- Combine Shoreline
- Interpolate Shoreline

- Smooth Shoreline
- Mean Shoreline
- Shoreline Statistics

Beach Profile Analysis Tools

RMAP includes a diverse set of tools for analyzing beach profile data. RMAP generates a report for each analysis, which can be exported as text, printed, or copied to the clipboard. Functions and analysis routines are described in the following text.

- Bar Properties
- Profile Comparison
- Cut and Fill
- Horizontal Alignment
- Least Square Estimate
- Volume and Sectional Volume Transport Rate
- Average
- Interpolate
- Translation
- Combine Profiles
- Synthetic Profiles
- Depth of Closure Calculation (Beach Fill Module)
- Erosion/Accretion Predictor (Beach Fill Module)
- Planform Evolution Model (Beach Fill Module)

Displayed Data: QC 46 030411

	X	Y	Z	D
1	1358409.000	232916.00	12.72	-26.02
2	1358419.00	232916.20	15.46	-16.02
3	1358427.00	232916.50	16.63	-8.02
4	1358440.00	232917.00	15.69	-5.00
5	1358454.00	232917.70	13.81	19.01
6	1358469.00	232918.30	16.17	34.02
7	1358479.00	232918.70	16.01	44.03
8	1358483.00	232919.00	13.90	48.04

Date: 2004/02/05 Time: 13:23

Notes:

Figure 6. The data table in RMAP allows the user to edit items in spreadsheet format and store documentation relating to individual items.

Research is continuing under the RSM research pillar within a new system-wide program. More detailed information about RMAP can be found in ERDC/TN-RSM-16, online at <http://www.wes.army.mil/rsm/pubs/pdfs/rsm-tn-16.pdf>. Questions can be addressed to Dr. Batten at Brian.K.Batten@erdc.usace.army.mil, or Dr. Nicholas Kraus at Nicholas.C.Kraus@erdc.usace.army.mil. User comments for improvements or additions to RMAP are welcome.

U.S. Army Corps of Engineers well represented at ICCE 2004 in Lisbon

Several Corps members from ERDC and districts and divisions participated in the International Conference of Coastal Engineering (ICCE) in Lisbon, Portugal, from 20 to 24 September 2004. These delegates were among more than 640 members from more than 40 countries who attended sessions from 8 a.m. to 6:45 p.m. daily, learning, listening, presenting, and discussing issues of concern to the international coastal engineering and research community. In spite of the unseasonably hot weather, the conference proceeded according to schedule.

At the request of the Corps' Coastal Engineering Research Board, CHL provided an exhibit highlighting the laboratory's coastal capabilities and the latest concepts in regional sediment management. Exhibits were housed in a tent connected to the conference facility and interaction with the delegates was very active during breaks as well as before and after the series of sessions. The Corps booth, in a good location, enjoyed constant activity, with more than 230 handouts taken and more than 80 additions solicited to the ERDC list server for Regional Sediment Management and Coastal and Hydraulics Laboratory technical publications.



Brigadier General Bo Temple (left) commander of North Atlantic Division and Lt. Col. Joseph T. Hand (right), Baltimore District, visit the Corps booth at ICCE 2004 in Lisbon, Portugal. The booth was attended by Elke Briuer, APR, (center) RSM Technology Transfer Manager from ERDC ITL, and Dr. Jack Davis, RSM Program Manager.

2005 Calendar

24-26 Jan - ASCE's Geo-Frontiers, Austin, Texas, Hilton Austin Convention Center Hotel, East Fifth Street. Papers are sought on recent advances in erosion mitigation mechanisms, geosynthetic products, and applications that will promote the interaction between the geotechnical community, the geosynthetics community, and the broader civil engineering profession. This includes advances in erosion processes, temporary and permanent geosynthetic erosion control products, hard armor-related materials, and experimental testing, design, installation, and field performance of geosynthetic erosion control products. Emphasis should be on new concepts and recent applications. The sessions will include invited speakers who will focus on state-of-the-art and international experiences. See <http://www.asce.org/conferences/geofrontiers05/index.cfm>.

24-26 Jan - GeoFrontiers 2005/Geo-Institute and Geosynthetics 2005 Congress, Austin, Texas, USA. Web site with current information can be found at <http://www.asce.org/conferences/geofrontiers05/>. Points of contact are listed at http://www.asce.org/conferences/geofrontiers05/geo05_contacts.cfm.

28 Aug-2 Sep - 10th International Symposium on the Interactions between Sediment and Water sponsored by the International Association for Sediment Water Science (IASWS) to be held in Bled, Slovenia, at the Grand Hotel Toplice. The following deadlines and key dates apply:

Response to First Circular http://www.iasws.com/	01 Apr 2004
Second Circular Issued	01 Sep 2004
Submission of Abstracts	01 Nov 2004
Notification of Abstract Acceptance	01 Mar 2005
Deadline for Early Registration	01 May 2005
Scientific & Social Program Issued	01 Jun 2005
Lake Bled Symposium	28 Aug-2 Sep 2005

12-16 Sep - 16th International Conference on Soil Mechanics and Geotechnical Engineering, Osaka, Japan. Information is available from <http://www.icsmge2005.org/>. Submit abstracts through First Author's Member Society NLT 10 Apr 2004.

20-23 Sep - Coasts and Ports 2005. The NCCOE <http://www.ieaust.org.au/nccoe/conferen.htm> is hosting **Coasts and Ports 2005**, jointly with IPENZ and PIANC. This will be the 17th Australasian Coastal and Ocean Engineering Conference (incorporating the 10th Australasian Port and Harbour Conference) and is to be held in Adelaide, South Australia, at the Adelaide Hilton. The conference theme is "Coastal Living - Living Coast." Abstracts are due 31 August 2004. Details will be posted at <http://www.plevin.com.au/coastsandports2005/>.

New On-line Publications

Demonstration Program Briefs - On-line
RSM Technical Notes - On-line



RSM *for balanced, sustainable solutions*